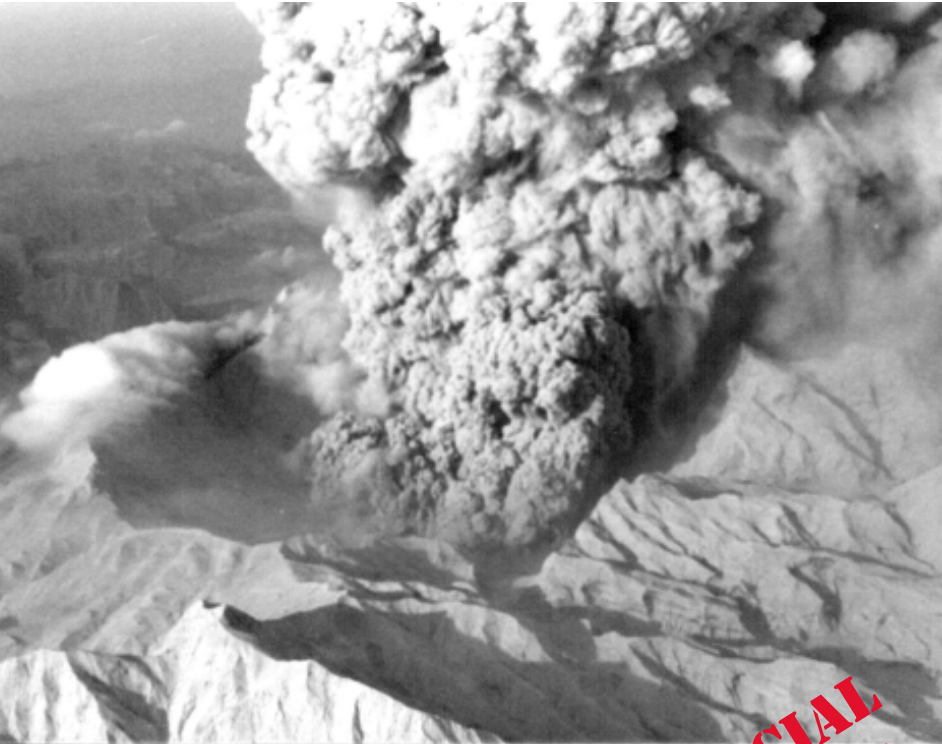


FUEL LINE

Defense Energy Support Center

Vol. 3, 2001



**SPECIAL
PACIFIC
EDITION**



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Defense Energy Support Center
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FUEL LINE

Fuel Line is an official publication distributed quarterly by and for the Defense Energy Support Center and fuel-oriented clientele. *Fuel Line* is prepared by desktop publishing applications and designed to provide timely, factual information on policies, plans, operations, and technical developments of the Center and interrelated subject matter. Views and opinions expressed in the *Fuel Line* are not necessarily those of the Department of Defense.

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On the cover: Mt. Pinatubo eruption;
Capt. David S. Douglas, SC, USN;
changing cartridges in fuel filter; F-16
aircraft.

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Meet Capt. David Douglas, SC, USN, commander of DESC's Pacific region, and his deputy, Walt Riddlehoover. They worked together in the Philippines in the early '90s, but only one escaped the eruption of Mt. Pinatubo. Who was faced with digging out of 12 inches of ash?

New Fuel System Coming to Guam Air Force Base 15

As a critical refueling point for aircraft in the Pacific skies, Guam's Andersen AFB must maintain its facilities to support large-body planes with required fuel. But a system built in 1962 could stand some improvements. Construction has begun on a new fuel distribution system that will dispense fuel twice as fast and at a lower cost.

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How do you supply fuel to customers in Alaska when the freezing climate works against you? What kinds of adjustments do you make? And how do you solve a mystery of off-specification fuel when winds are high, temperatures are low, and test results keep changing?

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DESC is upgrading fuel facilities across the South Korean peninsula thanks to some new approaches to contract management. Find out about the mechanisms that allow for more cost-effective construction of facilities and how three DESC teams monitor the supply of fuel to customers: inventory management, transportation, and quality.

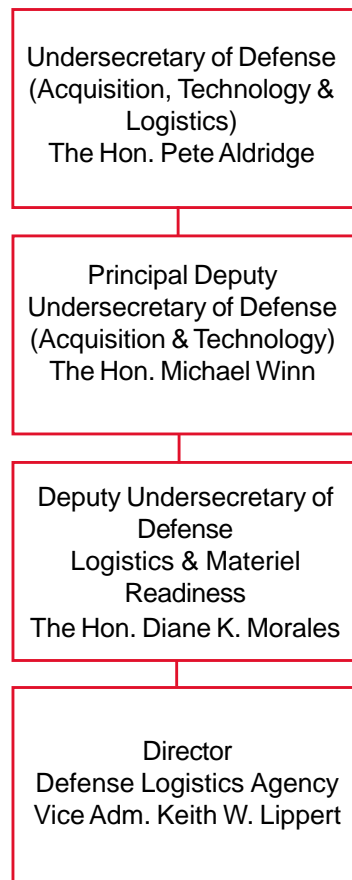
Geothermal Energy: News from the Underground 36

Drill down a few feet into the earth's surface and find a constant warmth—just about anywhere. Drill down deeper and find hot water and liquid rock in some places. Hit the hot combo and build power plants to generate electricity and provide heat and hot water for millions. Tap into warm earth and use heat pumps for heating and cooling. Geothermal (earth + heat) energy is clean, renewable and price competitive. Who's using it?

From the Director

This time of year one normally likes to think of taking leave, visiting with family and friends, or simply exploring some part of the world that has escaped us until now. But it is also a time of change—many parts of the DLA family are seeing new faces in leadership positions; new faces are also showing up in the Pentagon as the Administration fills numerous positions.

The logistics leadership tree now looks like this:



Within DLA, there is a new director of logistics operations (J3), Maj. Gen. Hawthorne “Peet” Proctor. Rear Adm. Dan Stone is now the N4 at CINCPACFLT [Commander in Chief, Pacific Fleet] in Honolulu, Hawaii.

At DESC, a lot of changes have taken place. Some time ago, Capt. Dale Scheffs, USN, departed for the Pentagon and Mark Iden took over the Bulk Fuels commodity business unit. A couple of weeks ago, Kelly Morris left the Direct Delivery CBU for a year at ICAF [Industrial College of the Armed Forces]. Maj. Ray Ward, USAF, new himself, is acting director of that CBU at the moment. Sharon Murphy, dual-hatted as the CSPO [Center Senior Procurement Official] and director, Alternative Energy CBU, is moving to San Antonio, Texas, to head the new Missile Fuels CBU, which joins the DESC family officially on Oct 1. Kevin Ahern came back to DESC from AMS Corp. to head up the Energy Enterprise office, while Jake Moser is holding down the “A” shop. Lt. Col. Ralph Wells, USA, has come aboard to replace Army Lt. Col. Marshall Jones as commander, DESC-Middle East. And, of course, Bill Robinson left DESC after decades of outstanding service.

More changes are coming and next year many key military jobs will be changing. The only constant in DESC is truly change!



DESC Director
Jeffrey A. Jones

One thing, however, remains the same. DESC is fortunate to have an extremely loyal work force. In addition to Kevin Ahern, other DESC members have come back from organizations they joined for promotions or other reasons. We’re glad to have them all back. DESC is really a special place—a clear mission, strong customer relationships, satisfying work, and measurable impact from coming to work every day.

Only with such a work force could we sustain such change in senior managers and still not miss a beat. When did we ever change three out of four CBU chiefs in a single 12-month period? Still, the work goes on, innovation continues, change occurs, and customers rank us no. 1 among DLA activities.

By the way, there is one last “last.” This is Claire McIntyre’s last edition of *Fuel Line*. She is leaving us, where she has been employed as a contractor, to take a “real” job elsewhere. We wish her the best and hope we can hire her back someday, too! ★

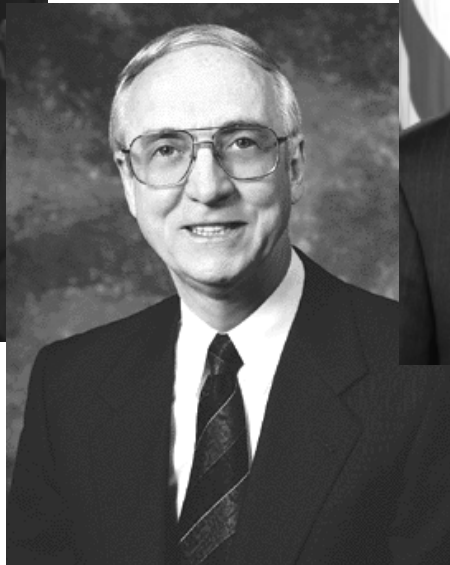
Service Secretaries Take Oath



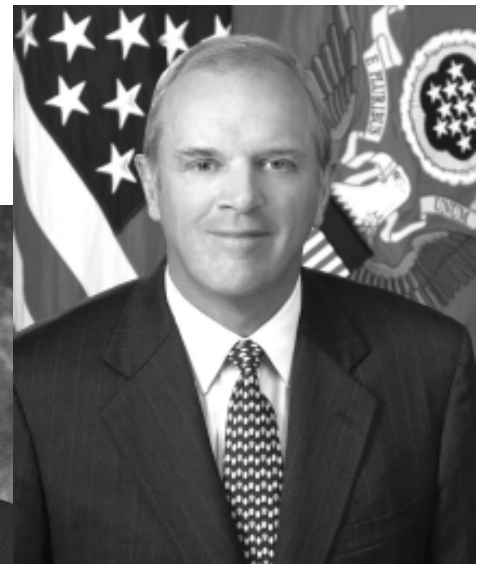
Left to right: Secretary of the Air Force James Roche, Secretary of the Navy Gordon England, and Secretary of the Army Thomas White take the oath of office in the White House Oval Office on June 18, 2001. DoD photo by R. D. Ward.



*James G. Roche
Secretary of the Air Force*



*Gordon England
Secretary of the Navy*



*Thomas E. White
Secretary of the Army*

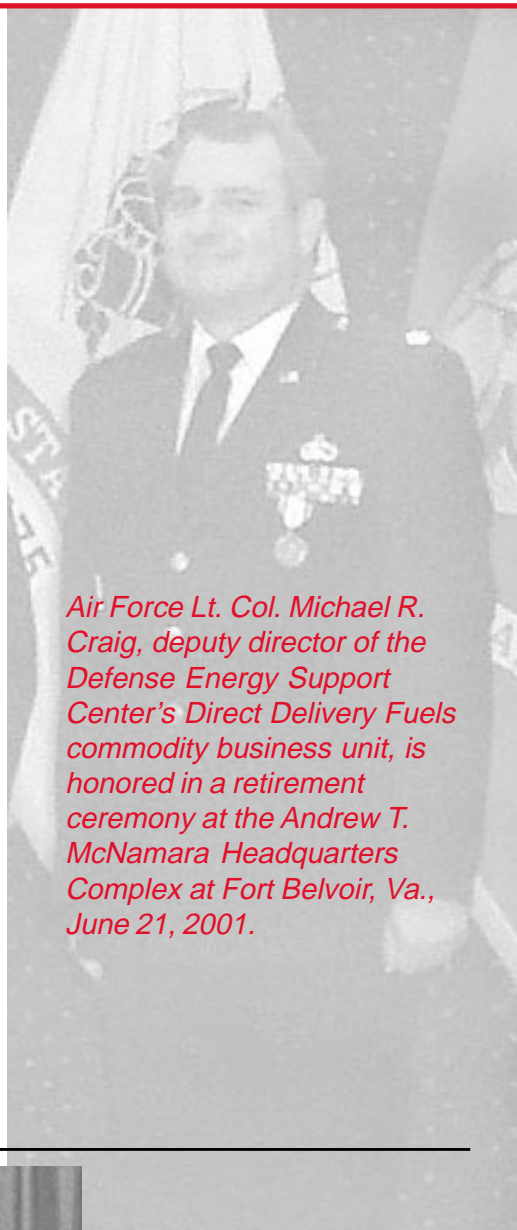
NEWSMAKERS...



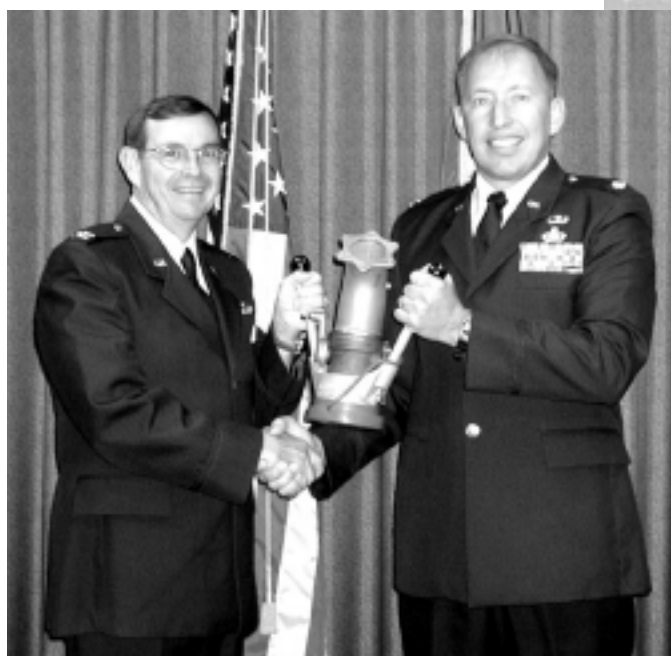
Well-wishers express parting sentiments to retiring USAF Lt. Col. Michael Craig.



Retired Lt. Col. Clayton Craig speaks with Gigi Tanner in receiving line.



Air Force Lt. Col. Michael R. Craig, deputy director of the Defense Energy Support Center's Direct Delivery Fuels commodity business unit, is honored in a retirement ceremony at the Andrew T. McNamara Headquarters Complex at Fort Belvoir, Va., June 21, 2001.



Change of Command Ceremony, Air Force Petroleum Office, Lackland Air Force Base, Texas, July 19, 2001. Col. David L. Dinning, left, relinquishes command to Col. (S) David M. King with ceremonial passing of the nozzle.

NEWSMAKERS...



At new pier, Punta Cugno, Sicily, Italy. DESC Director Jeffrey Jones, center, flanked by, left, C.F. Renato Tessarol, commander of Augusta Area, and C.C. Sergio Fronte, commander of Punta Cugno Depot. Kneeling: Massimo Fornaini, DESC-Livorno distribution facilities specialist.

At Germany's Mannheim-Rheinau Coal Yard. Left to right: Gunther von Dungen, chief of DESC-Europe's operations branch; Rolf Keller, coal yard supervisor; and Jeffrey Jones, DESC director. During his visit, Mr. Jones received a chunk of coal painted gold.



DESC's Bill Robinson, center, at retirement send-off on July 17, 2001, at Fort Belvoir, Va. Mr. Robinson most recently served as the agency's director of change management and strategic planning. He previously served as DESC's deputy director as well as program manager for the Fuels Automated System and director of the Bulk Fuels commodity business unit. Mr. Robinson is flanked by DESC's Col. Jack Vance, USA, left, and Col. Michael Broderick, USAF. In foreground: DESC Director Jeffrey Jones.

DESC Pilots Joint Petroleum Seminar

An Insider's View...

By Maj. John J. Rogers, USAF

Got joint? Twelve of us do—Joint Petroleum Seminar that is. On June 11-14, 2001, the Defense Energy Support Center (DESC) sponsored a pilot seminar designed to offer members of the joint fuels community a greater understanding of DESC and its processes, joint petroleum office responsibilities/actions, automated tools available to the fuels planner, and current and future issues affecting the joint fuels community. Other topics included doctrine; tanker slating; Military Construction; Maintenance, Repair and Environmental; inventory management planning; fuels deliberate planning; and the IPDS/OPDS [Inland Petroleum Distribution System/Over the Shore Petroleum Discharge System] processes. And, of course, we learned about the computer applications that provide fuels managers with the tools and data to perform their duties.

Why, you ask? The idea for the seminar was spawned during a joint petroleum working group to provide a forum to inform/enlighten joint petroleum officers and others in the

joint fuels community. Petroleum Management Consultants was tasked to formulate a lesson plan and bring materials together. I for one give them a hearty J-HOOAH!, a joint spin-off of the Army term of endearment, “hooah,” similar to “Bravo Zulu” for my naval classmates and a “Sierra Hotel” for my Air Force brethren. Our facilitators for the course had a staggering combined total of over 100 years of POL (petroleum, oil and lubricants) experience—from the Army, Navy and Air Force.

All in all, this “gentlemen’s course” (no tests) was well worth the time and money. We had a great cross-representation of Army, Navy, Air Force, Marines, civilians, reserves, and officer/enlisted ladies and gentlemen. There was great inter-service rivalry and, as you’d expect in a roomful of POL

professionals, nothing was sacred. We made friends, established contacts and, as we turned in our critiques, only two words came to mind. . . *Fuels Rules*. Questions? Have a great POL day.★

Maj. John Rogers is chief of petroleum/weapon systems analysis at Offutt Air Force Base, Neb.

The next Joint Petroleum Seminar will be held at DESC-Fort Belvoir, November 27-30, 2001. For more information contact John McCormick, Petroleum Management Consultants, Inc., at 703-767-7378 or jmccormick@desc.dla.mil.



Air Force Maj. John Rogers, left, and Marine Corps chief warrant officer 3 Oliver Ezell



Capt. David Douglas, SC, USN, left, and Senior Master Sgt. Joey Hudgins, USAF



*John McCormick, Petroleum
Management Consultants*



*Tech. Sgt. Shona Lawrence,
USAF*



Lt. Col. Scott Carlson, USA



*Lt. Col. Brian Perry, USA, left, and
Lt. Col. Terrence Cooper, USAF*



Senior Master Sgt. Joey Hudgins, USAF



Lt. Cmdr. Stephen Grace, USN



Maj. Curt Herring, USA



Janet Hall, left, and Vicki Baker

Defense Energy Support Center— *Pacific*

**HEADQUARTERS:
CAMP SMITH, HAWAII**

Hawaii, Alaska, Korea, Japan

As they carry out the Defense Energy Support Center's mission to supply fuel to the military services, they work in the midst of simmering volcanoes, subzero windchills and cultural diversity. They are DESC's Pacific regional personnel and they've got stories to tell about who they are, what they do, and how the surrounding terrain uniquely impacts the way they accomplish their work. Here, they step forward, bringing faraway islands into view. . .

Capt. David S. Douglas, SC, USN Commander, DESC-Pacific

[Capt. David S. Douglas, SC, USN, assumed command of Defense Energy Support Center-Pacific, located at Camp Smith, Hawaii, in May 2000. He had previously served on operational logistics tours with the Logistics Group, Western Pacific, and the Seventh Fleet. His last fuels job was as director of the Naval Supply Depot fuel department, Subic Bay, Philippines, from 1986 to 1990, after earning a master's degree in petroleum management from the University of Kansas. His Western Pacific experience also includes tours on four ships: USS Jouett (CG-29), USS Mahlon S. Tisdale (FFG-27), USS Sacramento (AOE-1) and USS Blue Ridge (embarked Seventh Fleet staff).]

Bay still stands as the best job I ever had. Only in the Navy are you given the opportunity to fill extremely challenging billets as a senior lieutenant."

After earning a master's degree in petroleum management in 1986, then Lt. Douglas managed the Navy's second busiest fuel depot at Subic Bay, spanning 305 acres with 70 storage tanks storing over 2.5 million barrels of bulk petroleum products.

"It was an opportunity of a lifetime," reflects the captain. "I managed a small corporation with

responsibilities in operations, inventory control, planning, maintenance, quality control, administration and personnel management." During his tenure as the Subic Bay fuel director, a staff



Capt. David S. Douglas, SC, USN

“It's great to be back in fuels after 10 years,” says Capt. David Douglas, SC, USN. “It's great to be in Hawaii, but managing the fuel operation at Subic

of six U.S. civil servants, 10 military personnel and over 50 Filipino foreign nationals moved approximately 1 million barrels of fuel per month in support of Clark Air Base, Seventh Fleet ships and local customers. In addition, the fuel professionals at Naval Supply Depot Subic Bay earned two Secretary of the Navy environmental protection awards and the Navy's first American Petroleum Institute award.

Walt Riddlehoover, who served as Capt. Douglas' deputy at Subic Bay, assumed the deputy commander post of DESC-Pacific in July 2001. After leaving Subic Bay, Mr. Riddlehoover filled senior fuel manager positions in Japan (with the Navy) and most recently as deputy commander of DESC-Pacific's Taegu, Korea, office. Like Laurel and Hardy, Abbott and Costello or Martin and Lewis, the team of Douglas and Riddlehoover is reunited once again in Hawaii.

Their experiences at Subic Bay remain fresh in their memories. When the United States decided to close bases and move forces out of the Philippines, then Lt. Cmdr. Douglas planned the shutdown of Naval Supply Depot Subic Bay's fuel department. After his departure, Mr. Riddlehoover remained behind to execute the facilities drawdown and closure. "I departed the Philippines prior to the eruption of Mount Pinatubo," observes Capt. Douglas. "Walt was not as lucky. Closing down the fuel depot in an environment of smoke and ash was not written anywhere in the plans I laid out."

"The 15th of July 1991 turned out to be the last Change of Command at NSD Subic Bay, and it is one day I will never forget," says Mr. Riddlehoover. "That was the day of

the major eruption of Mt. Pinatubo and a coinciding typhoon that brought all life in Central Luzon to a standstill, and turned day into night. Digging out from under 12 inches of ash, returning the fuel facilities to full operational condition in less than two months, and then executing the drawdown and closure of the fuel facilities all within 16 months remains the biggest challenge of my 27 years in this business."

He further notes that "This all would not have been possible without the superb assistance from DESC folks working in the Pacific and at Fort Belvoir in bulk fuels and engineering plans and services. They were always ready to provide the needed funds for the cleanup and closure, and never tired from the almost daily tanker/barge schedule changes required to remove fuel while maintaining sufficient inventory levels to ensure continued support of base operations until the departure of the last airplane and ship."

How does he feel about working with Capt. Douglas again?

"During those two years as Capt. Douglas' deputy [in Subic Bay], I learned much about operating, maintaining and improving a major fuel operation," observes DESC-Pacific's new deputy commander. "This was possible due to the captain's leadership style. He will give you the general guidance and direction that he wants to follow, then he steps back and lets you act to achieve those goals. But, never think he forgets what you have been tasked with, because he never forgets. And until a line is drawn



Mt. Pinatubo eruption, July 15, 1991.

"Closing down the fuel depot in an environment of smoke and ash was not written anywhere in the plans I laid out."



Walt Riddlehoover, deputy commander, DESC-Pacific

continued on page 10 ➤

HAWAII

Douglas. . .
continued from page 9

through the task listed in his spiral notepad, you are on the hook. The training I received as his deputy served me well when it was my turn to assume the director's position shortly after the volcano's eruption. Our one-two punch approach to issues will serve DESC and the Pacific Command well."

Capt. Douglas had hoped to return to the Philippines as commanding officer of Naval Supply Depot Subic Bay, but the U.S. withdrawal from the Philippines changed that career path. With his first choice for command eliminated, Capt. Douglas saw the commander billet at DESC-Pacific as a perfect fit and jumped at the opportunity to take command of this outstanding organization dispersed with offices at Anchorage, Alaska; Camp Smith, Hawaii; Taegu, Korea; and Yokota, Japan. "I'm a WESTPAC sailor, and I now get to apply my extensive Western Pacific knowledge in supporting the Pacific Command on a daily basis," says Capt. Douglas.

The Pacific Command is responsible for an operating area spanning over 105 million square miles. Almost half, or over 24 million barrels, of DESC's bulk petroleum inventory is located in the Pacific region. With the large volume of the area covered by ocean and the potential for flare-ups anywhere in the region, tanker slating and timely replenishment of bulk fuel stocks to support the warfighters is critical. The Pacific region team and DESC-Fort Belvoir personnel work together to keep the tanks topped-off.



1989. (Left to right) Capt. Marv Nordwall (executive officer, NSD Subic Bay) and Capt. John Morris (commanding officer, NSD Subic Bay) present the American Petroleum Institute Award to Lt. Cmdr. Dave Douglas (fuel department director), Walt Riddlehoover (fuel department deputy director) and utility technician chief Chris LeVelle (maintenance chief).

"I would give anything to have a 'fuelies' reunion with some of the superb fuel professionals from the past, like Bob Hanson (deputy), Jim Benton (operations foreman), Vic Macapagal (shift foreman), Dom Dudang (shift foreman), Francis Fong (electronics/electrical maintenance), Milo Sesante (maintenance coordinator), utility technician chiefs Charles Freeman and Chris LeVelle (maintenance), Ben Yaptangco (inventory control), Ben Ronquillo (administration) and Ben Gonzales (sub-area petroleum office)," says DESC-Pacific Commander Capt. Dave Douglas. "Maybe one of them will get a hold of this article, and we can track each other down."

DESC-Pacific is currently supporting the warfighter in many areas. From providing technical support and funding for extensive upgrades in fuel infrastructure in Korea and Hawaii, to resolving JP-8 quality problems in Alaska, to providing support for current East Timor peacekeeping operations and exercises Ulchi Focus Lens, Rimpac and Team Challenge, to streamlining bulk petroleum distribution operations in Japan, the Pacific team provides the best energy solutions to support the Pacific Joint Command. ★

Field Offices:

Camp Smith, Hawaii
Anchorage, Alaska
Taegu, Korea
Yokota, Japan

Pearl Harbor Fuel Pier Hosts Movie Premiere



Hotel Pier's 1300-foot length and 54-foot width easily accommodate an aircraft carrier or T-5 tanker.

The USS John C. Stennis (CVN 74) pulled into its berth at Hotel Pier two weeks prior to the May 21, 2001, world premiere of the Walt Disney movie "Pearl Harbor." From all accounts, the premiere was a total success and well received by VIPs who attended. But behind the scenes, the Defense Energy Support Center's Hawaii office was busy making alternate plans to support other VIPs in the Middle Pacific area—the warfighters.

Hotel Pier is the FISC [Fleet and Industrial Supply Center] Pearl Harbor fuel pier, and is normally used for offloading T-5 tankers and for loading barges to make fuel deliveries to Defense Fuel Support Points (DFSPs) in the Middle Pacific area of operations.

In anticipation of the two-week closure of the pier, the resupply of DFSP Kaneohe and DFSP Johnston Island was coordinated in advance to prevent scheduling conflicts, and T-5 deliveries were scheduled around the closure. Karen Fujita, DESC-Middle Pacific's inventory management specialist, observed that "It took diligent coordination between DESC's Bulk Fuels division, FISC Pearl Harbor, and fuel operations personnel from MCBH [Marine Corps Base Hawaii] Kaneohe and Johnston Island to assure continued mission operations without disruptions."

Mickey Mouse may have stolen the show, but the fuel professionals in the region got the job done. ★

Defense Energy Support Center— *Middle Pacific*

15 Defense Fuel Support Points:

DFSP Pearl Harbor

Terminal director—Lt. Cmdr. John Santosalvo, USN.
Storage capacity for JP-8, JP-5, and F-76: 3,338 MBBLS (thousands of barrels).
Receives product via T-5 tanker and from on-island refinery.
Supports U.S. Navy vessels operating in and out of Pearl Harbor, Hickam AFB, MCBH Kaneohe, Johnston Island, and Schofield Barracks.
FY00 throughput for all products: issued—3,445,314 barrels; receipts—3,275,811 barrels.

DFSP Hickam

Fuel director—Alphonso Parks.
Storage capacity for JP-8: 161 MBBLS.
Receives product via pipeline from DFSP Pearl Harbor.
Supports DoD strategic, cargo, and transiting aircraft from Hickam AFB, Hawaii Air National Guard, U.S. Coast Guard, Schofield Barracks, and Wheeler Army Air Field.
FY00 throughput for JP-8: issued—1,409,339 barrels; receipts—1,437,416 barrels.

DFSP Hickam ANG

Fuel point of contact—Arthur Asing.
No bulk storage. Stores and issues JP-8+100 from 11 R-11 tanker trucks; capacity—1 MBBL.
Supports Hawaii ANG F-15 aircraft.
Receives product via truck fill-stands at DFSP Hickam.
FY00 throughput for JP-8: issued—230,047 barrels; receipts—229,314 barrels.

Commander: Lt. Col. (S) Peter Camit, USAF

Facility Manager: David Acfalle

Supply Inventory Specialist:

Karen Fujita

Location: Camp Smith, Hawaii

Area of Responsibility: Primarily the Hawaiian Islands, Johnston Island, Kwajalein Atoll, and Wake Island. Also includes Guam in the Western Pacific. Assists the region with Diego Garcia and Singapore.

DFSP Kaneohe

Fuel director—Edward Campbell.
Storage capacity, JP-5: 61 MBBLS.
Supports fixed wing and rotary aircraft on MCBH Kaneohe.
Assigned aircraft include P-3C Orions, SH-60Bs, C-20Js, CH-53D Sea Stallions and H-3 helicopters.
Receives product via barge and/or tanker truck from DFSP Pearl Harbor.
FY00 throughput for JP-5: issued—270,019 barrels; receipts—282,203 barrels.
Location: east side of Oahu.

DFSP Schofield

(government-owned, contractor-operated)
Super station opened on March 1999; operated by TransMontaigne Terminals, Inc.
Storage capacity, JP-8: 952 barrels. JP-5 and MUR (gasoline) capacity: 429 barrels each.
Supports U.S. Army Schofield Barracks ground vehicles.
Receives product via tanker truck from DFSP Hickam and DFSP Pearl Harbor.
FY00 throughput for all products: issued—54,036 barrels; receipts—54,070 barrels.
Location: central Oahu.



Lt. Col. (S) Peter Camit, USAF

DFSP Wheeler

Capitalized, August 2000.
Fuel liaison—Sgt. 1st Class Scott Ritter.
Storage capacity for JP-8: 476 barrels.
Supports U.S. Army helicopter units based at Wheeler AAF.
Receives product via tanker truck from DFSP Hickam.
Location: central Oahu.

DFSP Pohakalua

Capitalized, August 2000.
Fuel manager—Wilfred Kihara.
Storage capacity, JP-8 and DL2: 870 barrels.
Supports U.S. Army's Pohakalua training area located on Hawaii.
Receives product via tanker trucks from Chevron.
Location: north central area in Hawaii (Big Island).

DFSP Barking Sands

Fuel manager—Ignacio Xavier.
Storage capacity for Jet A: 10 MBBLS.
Supports Pacific missile range facility.
Receives product from Chevron on island of Kauai.
FY00 throughput for all products: issued—13,795 barrels; receipts—14,725 barrels.
Location: east side of Kauai.

DFSP Johnston Atoll

(government-owned, contractor-operated)
Contractor—Raytheon Technical Services.
Site manager—Roy Katena.
Fuel manager—C.T. Person.
Storage capacity, JP-5: 41 MBBLS.
Receives product via ocean barge from DFSP Pearl Harbor.
Supports U.S. Army chemical weapon storage and destruction program and the U.S. Fish and Wildlife Service.
Planning underway for closure in FY03/04.
FY00 throughput for all products: issued—181,525 barrels; receipts—178,753 barrels.
Location: Oceania, atoll in the North Pacific Ocean. Distance to Hawaii: 717 miles.

DFSP Kwajalein Atoll

(government-owned, contractor-operated)
Contractor—Raytheon.
Site manager—Thomas Morton.
Fuel manager—Johnny Gardner.
Storage capacity, JP-5: 61 MBBLS; F-76: 105 MBBLS.
Receives product via tanker or ocean barge.
Supports U.S. Army missile range facility; military, civilian aircraft.
FY00 throughput, all products: issued—365,884 barrels; receipts—327,431 barrels.
Location: Oceania, group of atolls and reefs comprising the Marshall Islands in North Pacific Ocean.
Distance to Hawaii: 2,146 miles.

DFSP Wake Island

(government-owned; contractor-operated)
Contractor—Chugach Development Corp.
Site manager—Paul Fusco.
Fuel manager—Dwayne Penney.
Storage capacity, JP-5: 246 MBBLS.
Receives product via tanker or ocean barge.
Supports transiting military aircraft; serves as emergency landing

location for transpacific flights.
FY00 throughput, all products: issued—98,353 barrels; receipts—104,011 barrels.
Location: Oceania, atoll in the North Pacific Ocean.
Distance to Hawaii: 2004 miles.



Kwajalein Atoll, a famous World War II battleground, is now a U.S. missile test range. The Marshall Islands are two archipelagic island chains of 30 atolls and 1,152 islands.

DFSP Guam

Terminal director—Joe Quinata.
Storage capacity, JP-5, JP-8, F-76, RME: 1374 MBBLS.
Receives product via T-5 tanker.
Supports U.S. Navy vessels and Andersen AFB.
FY00 throughput for all products: issued—1,760,267 barrels; receipts—1,530,561 barrels.
Location: island of Guam in the North Pacific Ocean. Distance to Hawaii: 3,318 miles.

DFSP Andersen

Fuels management flight commander—Capt. Brent Gibson, USAF.
Storage capacity, JP-8: 1320 MBBLS.
Receives product via pipeline from DFSP Guam.
Supports U.S. Navy H-3 squadron; strategic, cargo and transiting aircraft from Andersen AFB.
FY00 throughput for all products: issued—607,799 barrels; receipts—901,089 barrels.
Location: northern end of Guam.

DFSP Diego Garcia

(government-owned, contractor-operated)
Managed by DG21, a U.K./U.S. joint venture consisting of SKE Support Services, Inc., Day &

Zimmerman, Inc., and WS Adkins, Ltd.
Site manager/fuel officer—Lt. j.g. Kristine Bergsten.
Contractor fuels manager—Bill Montgomery.
Storage capacity, all products: 1388 MBBLS.
Receives product via T-5 tanker.
Supports U.S., U.K. Navy vessels and DoD aircraft.
FY00 throughput for all products: issued—1,301,747 barrels; receipts—1,146,997 barrels.
Location: southern Asia, Indian Ocean archipelago, about halfway between Africa and Indonesia.

DFSP Senoko

(foreign government-owned; memorandum of understanding with Great Britain)
Administrator: DESC-Pacific.
Storage capacity, JP-5, F-76: 672 MBBLS.
Receives product via tanker and pipeline from local refineries.
Supports U.S., U.K. Navy vessels.
FY00 throughput for all products: issued—726,645 barrels; receipts—1,195,095 barrels.
Location: Singapore, southeastern Asia, island group located between Malaysia and Indonesia.★

Facility Maintenance and Repair Challenges in the Middle Pacific

By John Roundy

The remoteness of Defense Fuel Support Points (DFSPs) located in the Middle Pacific presents many challenges to the maintenance and repair of the facilities. The ocean air is extremely corrosive and the World War II-era facilities require constant attention to keep them from deteriorating. Some DFSPs are so remote that they are only accessible by infrequent military flights, which makes it difficult to conduct site visits and even more difficult to transport project tools and equipment.

Projects may have long lead times because materials must be ordered months in advance since transportation to the islands is by barge. Also, there are very limited manpower and resources available at these sites to respond to fires and

spills, so additional precautions must be taken to prevent the occurrence of these emergencies.

Reacting quickly to unexpected events at remote DFSPs is the daily challenge here at Defense Energy Support Center-Pacific, where there are 280 ongoing projects valued at over \$184 million. Project costs are high because of high mobilization costs and since fewer contractors are willing to bid on work at remote islands.

Located at Camp Smith, Hawaii, the DESC-Pacific facilities office serves as a regional extension of the DESC Facilities and Distribution Management office at Fort Belvoir, Va., for reviewing, budgeting and managing funds for Maintenance,

Repair and Environmental (MRE) projects. Because of the time difference between Hawaii and Virginia, project and facility questions are often fielded and answered from Guam, Japan, and Korea long after DESC-Fort Belvoir personnel have ended their workday.

The three-person facilities team, comprised of John Roundy, Cliff Bartek, and David Acfalle, is challenged with the uniqueness of facilities located on remote islands. They frequently visit DFSPs in the Pacific to better understand the issues and discuss projects with service personnel.★

John Roundy is a facility engineer at Defense Energy Support Center-Pacific.



John Roundy, region facility engineer



Cliff Bartek, region program analyst



David Acfalle, Middle Pacific facility manager

Guam's Andersen Air Force Base Gets New Fuel System

A new aircraft fuel distribution system is under construction on the northern part of Guam at one of America's strategic military bases—Andersen Air Force Base. The new system will provide the most efficient means to refuel large-bodied, heavy-lift aircraft.

Andersen AFB serves as a critical refueling point for aircraft traversing the Pacific theater. Its mission is to provide the highest quality peacetime and wartime support to project global power and reach from its vital location in the Pacific.

The new Type III fuel hydrant system will replace the existing system designed in the mid-1950s, greatly reducing current maintenance and repair expenses and providing the installation with a state-of-the-art fuel distribution system. The reduced costs and more efficient operation will enhance overall readiness.

The existing fueling system was built in 1962, and its 32 underground tanks and 30 fuel pumps feeding 57 outlets have become difficult to maintain. The Air Force was also concerned that the old system's underground storage tanks were susceptible to leaking from corrosion. In addition, the Air Force wanted an updated system designed to service its latest heavy-lift aircraft.



R-11 tanker truck refuels B-2 aircraft.



Left, Master Sgt. Russ Steger, fuel operations superintendent, and Capt. Brent Gibson, fuels flight commander.

The new system, to be constructed in four phases, requires only five pumps and eight operating tanks to feed 67 fuel hydrants. The constant pressure refueling system will greatly increase capability throughout Andersen's massive flight line. The new system will also

dispense fuel at twice the rate of the existing system.

Work on the first phase began in September 2000 and is scheduled for completion by fall 2001. A California-based contractor, Nova Group, Inc., was awarded contracts for the first three phases of the project. ★

Arctic Fuel Support

By J. Randy Banez

A cold December arctic wind is blowing at the remote site of King Salmon, Alaska, about 300 miles southwest of Anchorage. Instead of the normal quiet and calm of 20 contractors conducting caretaker operations, the base is a buzz of activity with scores of active duty Air Force aircrews and support personnel battling the biting cold elements in support of Operation Northern Denial.

The quiet of the winter darkness is shattered as a pair of F-15C air superiority fighters take to the sky to safeguard North American air sovereignty in direct response to a Russian long-range bomber training exercise in northeastern Siberia. With limited fuel available at this remote site (due to on-hand JP-8 inventory failing thermal stability tests), coupled with the normal barge resupply route, the Naknek River, long frozen, the increased activity has created a critical shortage.

Defense Energy Support Center-Alaska acts as the focal point and works closely with DESC-Fort Belvoir; Headquarters, Alaskan Command; 611th Air Support Group; Headquarters, Pacific Command; and the Air Force's Aerospace Fuels Directorate to develop contingencies and immediate solutions to provide critical fuel support for the operation. Through this cooperative working arrangement, a contractor was located in Naknek (20 miles north

of King Salmon Air Force Station) that was storing heating fuel for local customers that met Jet-A specifications.

DESC's Direct Delivery Fuels division awarded an emergency replacement-in-kind contract to procure 450,000 gallons of the stored fuel, and a team from Travis Air Force Base additized the fuel with Fuel System Icing Inhibitor, Corrosion Inhibitor, and Static Dissipater Additive to meet full military specifications. In return, DESC-Alaska provided the off-specification JP-8 to the contractor to use as heating fuel. Although not an everyday occurrence, this scenario underlines the importance of DESC-Alaska providing essential fuel support to the warfighter.

Alaskan Background

Alaska's strategic location is undeniable; the proximity of Alaska military sites in the Asian Theater give the Pacific Command a valuable force projection platform to support operations. Brig. Gen. Billy Mitchell, U.S. Army Air Corps, stated on February 13, 1935, that "Alaska is

the most central place in the world for aircraft, and that is true either of Europe, Asia or North America. . . . I believe in the future, that he who holds Alaska will hold the world, and I think it is the most important strategic place in the world."

Contrary to popular belief, Alaska is not a frozen wasteland where residents live in igloos and endure total darkness in the winter. Although winters are harsh and dominate a majority of the year (October to April), there are four distinct seasons in Alaska, no matter how short. Additionally, Alaska is a land of unsurpassed beauty, rugged snow-capped mountains that grace the landscape with an abundance of wildlife that share the environment where we work and play.

The word "Alaska" comes from the Yup'ik Eskimo term "Alyeska," which means "The Great Land." Alaska has a landmass of over 580,000 square miles, approximately 10,600 miles of coastline, a limited road network that supports only a quarter of the state, and unique weather conditions. All of these elements combined present the



F-16 preparing for operations

logistical challenges that must be overcome to support DESC's 250 Alaskan customer sites with aviation and heating fuel.

Fuel Delivery Programs, Customers

Unique to Alaska are the annual fuel delivery programs to support various sites such as Operation Cool Barge. Although now a significantly different program than at its climax in the 1970s, Cool Barge is no less critical today to Eareckson Air Force Station, Attu Coast Guard Station, and King Salmon AFS in the Aleutian island chain that depend on the annual resupply.

Operation Close Port is a barge delivery operation on the Yukon River. Fuel is transported via tank trucks from the North Pole refinery (15 miles south of Fairbanks) to Nenana, a small town on the Tanana River. The fuel is then transferred to river barges that travel 300 miles down the Tanana River to the Yukon River to Galena AFS in the interior of Alaska.

Another unique Alaska program is the Air Delivery Program that transports fuel via aircraft to several remote long-range radar sites that are inaccessible by either road or barge.

Elmendorf Air Force Base in Anchorage and Eielson AFB near Fairbanks are the largest customers in Alaska, requiring approximately 82 million gallons of jet fuel annually for normal operations. The types of aircraft assigned to these bases are the F15C air superiority fighter, F-15E Strike Eagle, F-16 Fighting Falcon, A-10 Warthog close air support aircraft, C-130 transport, and the KC-135 Alaska Air National Guard refuelers.



Mount McKinley

Anchorage Wildlife

Anchorage is a diverse blend of natural beauty with the modern conveniences of a growing city. The Chugach Mountains border the eastern and southern portion of the city with the Alaska Range to the west and occasionally Mount McKinley to the north, giving a magnificent daily panoramic view of Alaska's majestic splendor. The wildlife is an added bonus of living in Alaska, and residents develop an understanding and respect for nature as the city and nature struggle to co-exist. The annual salmon runs in Ship Creek in downtown Anchorage occur during the summer, while moose and eagles are spotted frequently (occasionally bears, which is not necessarily good). Visitors are reminded that when you visit Alaska, you are no longer at the top of the food chain—you are now part of it. It is not uncommon to see a moose grazing in your flower

garden or trees year round, but it is that uniqueness that makes Alaska so special.

The DESC-Alaska team located at Elmendorf AFB in Anchorage takes enormous pride in overcoming the logistical challenges to ensure mission accomplishment. The



Moose with set of twins.

beauty of Alaska provides a spectacular backdrop to a dedicated office of professionals quietly doing their jobs and willing to go that extra mile to ensure that we provide the best fuel support to our customers in "The Great Land."★

Randy Banez is deputy commander of Defense Energy Support Center-Alaska.

Eareckson Air Force Station and the Mystery of the Off-Spec Fuel

By Lt. Col. Verdis P. Redmon and
Gary Moessinger

The Defense Energy Support Center's mission is to provide "best energy solutions" or comprehensive energy support in the most effective and economical manner possible. That means getting the right quality and quantity of fuel, at the right price, at the right place and time requested by the warfighter.

But what if it's discovered that the entire JP-8 inventory at an air station fuel storage area is off-specification, even though a barge delivery receipt had passed all previous testing requirements several months earlier? And what if this situation is further complicated by the fact that delivery of new fuel is not possible because of extreme, freezing weather conditions and the warfighter needs more fuel in response to a real-world contingency?

This was the challenge facing DESC-Alaska at Eareckson Air Force Station during this past winter season. With time of the essence, the employees in the DESC-Pacific region answered the call for help head-on, braved severe weather conditions, and provided outstanding, uninterrupted bulk fuel support to the warfighter.



Aerial view of Eareckson AFS in the winter.

Isolation

Eareckson AFS, a government-owned, government-operated facility isolated on Shemya Island, Alaska, has two operating tanks and three bulk storage tanks. (Shemya is the second to the last island in the Aleutian Chain, over 1500 miles from Anchorage, and is accessible only by air or sea periodically.) JP-8 fuel is delivered to Eareckson AFS during Operation "Cool Barge"; the name refers to the cool season in Alaska from May through September when there is no freezing and high seas, and weather conditions are favorable for bulk fuel barge deliveries to locations throughout the Aleutian Islands of Alaska.

Normal resupply required the contractor to send receipt samples to the designated Air Force area

laboratory within 24 hours of the barge discharge for further testing. Due to the remoteness of the area laboratory, a considerable time-lapse existed for receiving test results. Consequently, the Eareckson contractors were allowed to issue JP-8 pending test results from the laboratory. Only type C tests were required to validate the quality of JP-8 offloaded from barges to Eareckson's fuel depot pending a full B-1 test from the area laboratory.

Failing the Thermal Stability Test

From July 1999 through August 2000, Cool Barge shipments of JP-8 were being received on-specification according to the type C testing, but later determined to be off-specification when the area laboratory did a full B-1 test. In all cases, the area laboratory failed the receipt samples for thermal stability.

Eventually, all tanks at Eareckson were discovered to contain off-specification JP-8 due to thermal stability test failures.

Thermal stability is important in ensuring that lacquers or deposits, which can adversely affect high-performance aircraft engines, are not forming. The Jet Fuel Thermal Oxidation Test (JFTOT) checks thermal stability of JP-8.

Faced with this challenge, the Air Force requested DESC's assistance in resolving the thermal stability quality problems. Gary Moessinger, DESC-Pacific's quality manager, was tasked with investigating the cause of the thermal stability problem and providing a recommended course of action. Potential causes of the problem could be anything from contamination of the product with some amount of chemicals or metals not large enough to cause the particulate tests to fail, improper sampling techniques or equipment, or incorrect testing methods.

Swinging from a Cherry Picker

In June 2000, tank #123 was brought back on specification by adding a metal deactivator (DMD2) to the JP-8. Wind speed at Eareckson AFS seldom drops below 20 mph. So swinging from a cherry picker while adding a 55-gallon drum of DMD2 mixed with fuel to a 42-foot tank with a hand-pump was no easy task. This tedious operation, along with rainsqualls and temperatures in the mid-30s, made for an exciting evolution.

Despite the conditions, the quality team completed the task of doping tank #123 without any incidents. Samples were flown to the labs and passed all tests. All indications were



Changing filter cartridges in clay filter vessel. Top, Master Sgt. Frank Davis, USAF; bottom, Gary Moessinger.

the Air Force was back in business, with only two bulk tanks, #124 and #125, having off-specification fuel. This was not the case.

To complicate matters further, tank #123 had to be emptied and cleaned in preparation for a scheduled coating project. Tank #124 had been cleaned and coated in May 2000 and designated as the next receipt tank. Fuel was transferred to tank #124 on July 15. An additional 788,000 gallons of JP-8 was received into tank #124 on August 22. Once again, the barge samples passed the type C tests on-site, but failed the thermal stability test performed by the area laboratory. Still "no good" fuel at Eareckson.

Trying the Faudi Filter

No single cause of the failures could be pinpointed. Mr. Moessinger's problem-solving team included Mike Purkey from DESC-Fort Belvoir; Army Master Sgt. Scott Marcinkowski, Operations NCOIC (non-commissioned officer in

charge), DESC-Alaska; and an on-site Air Force fuelie, Master Sgt. Frank Davis. Several approaches were explored. First, bench blending the fuel in tank #124 showed that, when filtered through diatomaceous earth, the fuel passed the JFTOT. (Bench blending refers to the process of calculating, in the laboratory, how much good fuel or chemicals need to be added to the off-spec product to bring it back on specification.) Also, bench blending showed that the DMD2 metal deactivator would not work. Since DESC had a Faudi filter, which uses diatomaceous earth as a filter medium, in storage in Alaska, the filter was shipped to the site with enough earth to filter a million gallons in tank #124.

To further expedite the testing process, DESC furnished a new JFTOT tester to use on-site, which reduced the test result processing time range from seven to 10 days to just three or four hours.

continued on page 20 ➤

The team spent the first day on the island setting up equipment and trying to make it fit into the existing piping system. The first trial run was filtered in a loop out of, and back into, tank #124. After 30 minutes, a sample from the filter was tested and passed, but an hour later, a sample failed. With a 300-gallon-per-minute rate, changing out the earth every 30 to 45 minutes was not feasible. Back to the drawing board.

After talking to all parties concerned, an idea surfaced to try a type of filtering clay (Attapulugus) that is used by refineries to strip out all additives from fuel. The loose clay was used in the Faudi filter, but there was no change in the results. Further analysis revealed that the fuel needed to stay in the clay for a longer period of time to work best. A bag of clay was put into two pillowcases and placed in the filter. Same results.

Next, the lab technician ran fuel through the clay by pouring it through a filter in a paper funnel and it passed the JFTOT. Results showed that this process made the fuel “neat” by stripping out the additives and that the Faudi filter is primarily a particulate filter and was not doing the job. A different type of filter vessel was needed.

Was the Barge the Source?

Amidst these discoveries, another barge load of JP-8 fuel arrived on November 7, 2000. Since the JFTOT tester was now on-station and the team was aware of JFTOT failure problems, samples were taken from the barge tanks and tested prior to off-loading. All



Filtering operation. Clay filter, center background. Foreground: hose cart.

samples failed the JFTOT once again, causing the barge load to be rejected. This was the first indication of a potential source of the failures—the barge. Samples from this barge were forwarded to Southwest Research so experts could determine what was in the JP-8 that caused the JFTOT failures.

Adding the Velcon Filter

Master Sgt. Marcinkowski and Mr. Moessinger then visited Williams Refinery in Fairbanks to find out how the refinery used the Attapulugus clay and whether they had any suggestions for resolving the JFTOT failure problems. Refinery personnel explained that they use the clay cartridges in a different type of filtering vessel than the Faudi filter. The clay was used as a “last” filter on all of their jet fuel, not the bulk clay method the DESC team had attempted.

After purchasing clay filter canisters and a Velcon filter vessel, the team had to determine how much fuel could flow through each set of

filters before they quit filtering. Master Sgt. Marcinkowski and Master Sgt. Davis flew to Denver, Colo., to the Velcon Filter Co., to establish a filtering time range. Samples from tank #124 were flown in for a test, which revealed that, during filtering, the conductivity additive would initially be stripped out. As the filtering progressed, the additive would saturate the clay elements and prompt a reading. First conclusions were that 72,000 gallons could be filtered before replacement of the filter canisters. That changed to 100,000 gallons later and, finally, 250,000 gallons. The conductivity meter initially read 0-6 picosiemen per meter (pS/m) with only 10 percent increases per hour. If the reading was over 20, the operation would stop to perform a JFTOT test, and then proceed if test results were favorable.

After two failed attempts to land at Eareckson due to weather conditions, the team finally arrived in early December with everything needed to set up and run the new filtering operation. The goal was to

filter the off-specification product out of tank #124 into clean tank #123. But first they filled a fuel truck to test the filters and prevent adding any of the off-specification fuel directly into a clean tank. They pumped the fuel through the Faudi filter, then through a hose cart (reducing the chances of earth from the Faudi filter entering into the clay vessel), then into the clay cartridges, and finally into the truck. A sample passed the JFTOT with an initial conductivity reading of 18.

They proceeded to filter into tank #123 for one hour and sampled after the Velcon clay filter system. All samples passed the JFTOT and conductivity was 15. Progressing at approximately 14,500 gallons per hour, the team was holding its breath. As planned, they were running JFTOT tests continually, but the tests take two and a half hours to run, plus an additional hour to 90 minutes for setup and shutdown. They could have easily pumped 50,000 gallons in that amount of time. With conductivity readings of 81, they stopped filtering at 100,000 gallons to take a sample and it passed.

They now believed they had on-specification, “neat” jet fuel on the island. It was not JP-8 (due to the apparent stripping out of the additive), but it could be used as civilian type Jet-A. This confirmed that the cartridges could filter up to 100,000 gallons. But would the cartridges last through 250,000 gallons of filtering?

As a precaution, they transferred (by truck) 63,000 gallons of good fuel into one of the operational tanks (#126) to prevent contaminating the “neat fuel” in the event the filters did not continue working. However, during testing it was determined that

the Fuel System Icing Inhibitor (FSII) was not stripped out of the fuel by the clay filter as was previously believed. Initially, the FSII concentration decreased only a little. However, it leveled out and remained within specification limits.

A Nerve-Racking Night

The team proceeded to filter up to the 250,000-gallon maximum for the first set of cartridges, continually conducting the JFTOT throughout the night. It was a nerve-racking night, waiting to see if the filtered fuel was good or bad. It turned out great. They changed out the cartridges, which takes three plus hours, and continued on. By the end of the operation, the team managed to filter and clean over 560,000 gallons out of tank #124 before the system lost pressure, forcing them to stop.

The team took a well-deserved break for the Christmas holidays. Meanwhile, the contractor moved all off-specification fuel into tank #125, leaving tank #124 empty to receive filtered fuel. Master Sgt. Davis remained behind to additize the cleaned fuel with icing inhibitor, corrosion inhibitor and anti-static additive. Everything passed the JFTOT. The Air Force now had on-specification JP-8 for all aircraft.

On January 9, 2001, Mr. Moessinger, Master Sgt. Davis, and Steve Kelly from DESC-Alaska returned to Eareckson AFS and successfully filtered the remaining 1.3 million gallons. This quality team met the challenge head-on and resolved the situation through their dedication to devising and operating the filtering system in winds of 96 mph, temperatures in the low teens, and wind chill factors well below

This quality team met the challenge head-on . . . in winds of 96 mph, temperatures in the low teens, and wind chill factors well below zero.

zero. Their efforts clearly demonstrated unusual courage and competence in a mission critical situation.

Cause of the Problem

Southwest Research determined that the off-specification fuel had been contaminated by deicer fluid, resulting in thermal stability failures. The fluid was carried with the fuel in the barge cargo tanks and delivered to the air station for use on the runway. Several new procedures were implemented in response to the off-specification fuel mystery. DESC now issues the Cool Barge contract solicitation F.O.B. destination, which transfers the risk of product quality to the barge company, and stipulates that only DESC bulk fuel products will be carried on the barge. Also, the thermal stability test is now conducted by DESC’s own laboratory personnel on-site prior to the departure of the barge from the loading location and prior to the barge discharge at the receiving station.★

Lt. Col. Verdis P. Redmon is the commander of Defense Energy Support Center-Alaska. Gary Moessinger is the quality manager at DESC-Pacific.

Prudhoe Bay

By J. Randy Banez

Twenty-four hours a day, seven days a week, in an austere environment under some of the harshest weather conditions in the world, crude oil is pumped up from a depth of 8500 feet from several wells connected to a pump station. So starts a journey from Prudhoe Bay, Alaska, down a 48-inch pipeline crossing three mountain ranges, more than 800 river and stream crossings, and ending at its final destination 800 miles away at the Alyeska Storage Terminal in Valdez, Alaska, at the mouth of Prince William Sound.

Prudhoe Bay is located about 600 miles north of Anchorage. The region is considered an arctic desert with limited precipitation (about 3 ½ feet annually). However, the northern location translates into some of the most extreme arctic weather conditions, with temperatures reaching -68 degrees Fahrenheit and high winds driving the wind chill factor to -115 degrees Fahrenheit or lower. For 56 days in mid-winter, the sun never rises above the horizon on the North Slope. These are the working conditions in the Prudhoe Bay area.

The Trans-Alaska Pipeline

Oil was discovered in the region in 1968 but it was not until 1973, after all of the environmental impact studies were completed and permits

granted, that construction of the Trans-Alaska pipeline and the storage terminal at Valdez commenced. At a cost of over \$8 billion and four years of labor by over 70,000 people, the Trans-Alaska pipeline and terminal were completed. Hailed as an engineering marvel, the pipeline overcame several terrain obstacles while ensuring the protection of the environment.

To protect the permafrost layer of the ground from the 145-degree temperature of crude oil in the pipeline (the oil's temperature in the ground is 180 degrees), about half of the pipeline is located aboveground. Because the permafrost is frozen, the heat of the oil could melt the solid ground layer and cause the pipeline to sink. At mountain crossings, most pipelines are buried due to avalanche dangers. At large river crossings, bridges support the lines; at smaller crossings, the pipes are constructed under the river.

The Alyeska Pipeline Service Company operates the Trans-Alaska pipeline, which is owned by six oil companies. To date, the pipeline has had a cumulative throughput of 12.49 billion barrels of crude oil.

British Petroleum provided a rare opportunity for several DESC personnel in August 2000 to see

first-hand the crude oil process. The tour started with a two and a half-hour trip on a company-chartered 737 used to ferry work crews from Anchorage to Deadhorse Airport.

Endicott Island

The drill station visited was Endicott Island, a manmade island 2.5 miles from Alaska's north coast in the Beaufort Sea. A five-mile manmade gravel causeway interlocks Endicott's two manmade islands together to the north coast. The island houses an operating and support crew of about 75 people for around-the-clock drilling operations. Due to the remoteness of the site, the 45-acre Main Production Island was built as a self-contained community with its own operation, processing and living facilities, life support systems, medical facility and fire fighting equipment. For the majority of workers, this island is all they see in their two-week rotation, except for the ride to and from Deadhorse Airport.

Endicott has over 100 production wells that produce 65,000 barrels a day of crude oil. When the crude oil is extracted from the wells it also contains water and gas, which are separated from the oil after transport to processing facilities on the island. The abundant natural gas is injected into the subsurface to enhance the production of the oil well by

maintaining the pressure in the oil reservoir. A small amount of natural gas is used to produce power necessary to operate the entire facility.

From the Endicott Island production facility and 11 more just like it that dot the landscape of Prudhoe Bay, the crude oil is shipped by aboveground pipelines that converge at Pump Station #1. There, the oil can be sent directly into the pipeline or collected in the two 210,000-barrel surge tanks, depending on the rate of receipt. Pump Station #1 boosts the pressure up to 750 pounds per square inch.

make it to the end of the pipeline. Small refineries or topping plants at Pump Station #s 6, 8, and 10 produce turbine fuel for gas turbines at stations south of the Brooks mountain range. Each topping unit processes about 3300 barrels of fuel that is stored, then delivered by truck to other stations.

Valdez

Valdez is a picturesque city situated at the northeast corner of Prince William Sound, surrounded by snow-capped mountains, and the northernmost ice-free harbor in the United States. The city has a population of 4500 people, year-

round, and loading it aboard tankers. There are a total of 18 crude oil holding tanks that are 250 feet in diameter and 62 feet high with a total storage capacity of over 9 million barrels of oil. The tanker loading facilities include one floating and three fixed berths that can be operated simultaneously or independently, depending on the operation. Since 1977, a total of 14,000 tankers have loaded North Slope crude oil for delivery to U.S. West Coast and Asian markets.

In 1989, when the Exxon Valdez ran aground and caused the oil spill in Prince William Sound, it highlighted the United States' inability to react to a catastrophic accident. In response to the Oil Pollution Act of 1990 (OPA 90), Alyeska's Ship Escort/Response Vessel System (SERVS) was created to fill this void. SERVS ensures that all loaded tankers are accompanied as they move through Prince William Sound. The escort vessels are equipped with oil spill response equipment that can be rapidly deployed. They can also be used to tow vessels in distress. Highly trained oil spill response crews in Valdez are on standby 24 hours per day.

As Department of Defense fuel experts who ensure that our customers receive quality fuel when and where they need it, the visit to Prudhoe Bay allowed us to see the entire process, from drilling to refining of crude. It was also a pleasure to meet the dedicated professionals in private industry who ensure that DESC receives the refined product needed to meet our customers' requirements.★

Randy Banez is deputy commander of Defense Energy Support Center-Alaska.



Mile Marker 0 ,Tran-Alaska Pipeline. Left to right: Randy Banez, deputy commander, DESC-Alaska; Jeffrey Jones, DESC director, Lt. Col. Verdis Redmon, commander, DESC-Alaska.

The North Slope currently has 1,627 production wells at 12 oil fields producing about 1.2 million barrels a day. In the 1980s, production peaked at 2.1 million barrels a day.

A total of 12 pump stations were built along the pipeline, however, only seven are needed to move the crude oil. It takes roughly six days for oil introduced at Pump Station #1 to

round, and hosts over 200,000 tourists during the summertime. The original city location was wiped out during the March 27, 1964, earthquake when a tsunami (tidal wave) hit the city. It was reconstructed at its present location.

Across the bay is the 1,000-acre Alyeska terminal that includes everything necessary for receiving

DESC Upgrades Korean Fuel Facilities

By Mike Anderson

The recent reopening of the Yongsan Transportation Motor Pool (TMP) service station marked the latest milestone in a comprehensive Defense Energy Support Center (DESC) upgrade of bulk petroleum and TMP fuel facilities in Korea. Managed by DESC-Korea and the Air Force Center for Environmental Excellence (AFCEE), the Yongsan TMP was the third Army facility to be completed this year, preceded by stations at Camps Eagle and Red Cloud.

Program planning using environmental Indefinite Delivery, Indefinite Quantity (IDIQ) contracts began over two years ago. The AFCEE IDIQ concept was new to Korea and showed great promise. It allows DESC the latitude to accomplish the facility upgrades throughout the peninsula using a U.S.-based, worldwide environmental construction company [IT Corporation] to provide design and construction management, with Korean subcontractors performing the actual facility construction and upgrades. Based on this teaming arrangement, we are now seeing the results of all our hard work.

The TMP upgrades, which are particularly visible to service members in Korea, are only a small part of a multi-year, \$160 million program. The program includes



Camp Red Cloud Transportation Motor Pool facility before upgrade. . .

inspection and repair of Army and Air Force bulk fuel facilities, storage tanks, hydrant fuel system upgrades and repairs, pipeline work, and much more. Current projects have also set the stage for future automatic tank gauging upgrades across the South Korean peninsula.

DESC-Korea anticipates a 30 to 40 percent cost savings over allocated program amounts based on reduced labor and material costs recognized so far using Korean subcontractors. The Korean construction companies have adapted tremendously to the U.S. construction and quality control standards required under the upgrade program.

As a spin-off of the AFCEE IDIQ contract, DESC-Korea and the Naval Facilities Engineering Support Center (NFESC)

established a Korean Multiple Award Task Order Contract (MATOC) that allows DESC to contract directly with Koreans. NFESC provides design, construction and quality control oversight. In May 2001, Contracting Command Korea signed contracts with two local Korean subcontractors to perform Maintenance, Repair and Environmental facility upgrades, and inspection, testing and repair services under the first-ever DESC-Korean MATOC. Under this contract, the same contractors who delivered quality workmanship in the Phase I upgrades will now focus on TMP upgrades and minor projects in conjunction with the AFCEE IDIQ contract. This allows DESC-Korea to further accelerate the project schedules while saving an additional 20 to 30 percent over allocated program funding.



during. . .

Upgrades to DFSP Kunsan began in June 2001, and include facility valve pits, sumps, the tank lightning rod system, the boiler room, Fuel System Icing Inhibitor and Corrosion Inhibitor tanks, and recoating of the two 8-inch pier and dolphin pipelines that receive barge shipments.

DESC-Korea attempted to award this same project last year at a cost of \$258,000. Under the Multiple Award Task Order Contract, the same project is now costing DESC \$158,000—just a small portion of the cost savings anticipated under the MATOC.

DESC is taking a proactive role in preventing potentially damaging shutdowns and environmental problems. With all of the agencies working together as a team, we're standardizing petroleum equipment across the Korean peninsula, completing badly needed safety upgrades, improving environmental protection, and saving hundreds of thousands of dollars in the process.★

Mike Anderson is chief of DESC-Korea's facilities division.

Korean construction companies have adapted tremendously to the U.S. construction and quality control standards required under the upgrade program.



after. . .

DESC-Korea Fuel Facilities Upgrades

Phase I: all capitalized Army facilities north of Seoul (Camps Bonifas, Casey, Edwards, Page, and Red Cloud, K-16 Army Airfield, and Yongsan Garrison) and Camps Eagle and Long located in the eastern corridor.

Phase II: Army and Air Force facilities located in the central area of the peninsula (Suwon, Osan, and Kunsan Air Bases; Camp Humphreys).

Phase III: southern area of the peninsula (Camps Carroll and Walker; Kwang Ju and Taegu Air Bases) and government-owned, contractor-operated Defense Fuel Support Points under DESC-Korea management (Yechon, Kunsan and Pohang).

Projects at Camps Bonifas, Long, Eagle, and Humphreys; K-16 Army Airfield; Suwon, Osan, Kunsan, Kwang Ju and Taegu Air Bases are scheduled to start or be completed by mid-2002.

DESC-Korea's Inventory Management Section

When the Defense Energy Support Center capitalized U.S. Army bulk fuel in Korea last February, a new era of inventory management began, bringing many new challenges to the Inventory Management section of DESC-Korea.

The capitalization process means that DESC has taken over ownership of the fuel from the Army until the fuel is received into vehicles or sent via tank trucks to refuel vehicles in the field. That is, DESC will retain ownership of the fuel during storage; existing fuel stored at Army facilities will switch from Army to DESC ownership. At the same time, inventory procedures have been largely computerized from the Army's manual system.

As a result, section personnel are no longer glued to their computers—they are now able to visit the U.S. Army's supply points in downtown Camp Carroll (Waegwan), Camp Humphreys (Pyongtaek) or Yongsan. The travel serves a two-fold purpose. First, members of the Inventory Management section are able to assist in Fuels Automated System (FAS) training for the new inventory managers at the sites and, second, they are clearing numerous transaction issues resulting from personnel inexperience, technical glitches in the system, or inaccurate customer information.

Adding to the challenge is the language barrier between inventory managers at the supply points, who are Korean citizens, and the FAS help desk in Atlanta (only one side speaks Korean). To deal with the language barrier, personnel from DESC-Korea's office serve as translators during three-way conversations. ★



Choe, Sung Ki



Yi, Myong Sun



Jerry Mohler

DESC-Korea's Inventory Management section consists of three civilians who have spent over 100 years in the petroleum field. Choe, Sung Ki is the senior member of the triumvirate and will retire this October after 45 years of service and petroleum expertise with U.S. Forces Korea. Jerry Mohler, the section chief, spent 30 years in U.S. Army petroleum before joining DESC-Korea three years ago. Yi, Myong Sun, the junior member of the team, spent 25 years in government service, mostly in the petroleum field.

Mission: Bring U.S. Army fuel inventory management up to pace; assist U.S. Air Force to transition to the FAS (Fuels Automated System) Enterprise System or "purple hub"; and conduct FAS transactions for Army Posts, Camps and Stations contracts and seven Defense Fuel Support Points.

DESC-Korea's Transportation Section

Earlier this year, the majority of U.S. Army-owned rail tank cars in Korea were retired, forcing DESC-Korea to use contract rail tank cars. This change in product movement resulted in a substantial price increase to move product throughout the peninsula. Other transportation challenges included the fact that 1998 floods had left Defense Fuel Support Point Uijongbu unable to be resupplied by rail tank car until earlier this year due to washed out rail lines. In addition, fuel delivered to Tongduchon (Camp Castle) was routinely moved from the railhead by contract tank truck to the bulk storage tanks, resulting in product being handled twice.

As an added twist, some locations currently receiving product via rail tank cars could save money by using tank trucks, a method of transportation not included in the current contract. But the existing tank truck contracts were nearing their authorized maximum order quantities. Because moving fuel by tank truck costs two-thirds as much as moving the same quantity of product by rail tank car, the DESC-Korea transportation team, along with Air Force Maj. Mike Todd, operations officer for DESC-Korea, began working with Contracting Command Korea to modify the tank truck contracts.

The tank truck contracts were modified to increase the total requirement amount and to add locations that could save money by using tank trucks in lieu of rail tank cars for resupply. Now DESC-Korea can move as much product as required, by the most economic means.

As a result of these contract modifications, DESC saved approximately \$400,000 by delivering 10 million gallons of JP-8 via tank truck that was previously delivered via commercial rail tank cars. Although a great success story for the DESC-Korea transportation team, this sort of initiative is becoming routine as they continue to look for ways to save government transportation funds.

During the past year, the DESC-Korea transportation section was responsible for over 1,600 movements by rail and 15,000 movements by tank truck, resulting in almost 60 million gallons of fuel moving throughout the Republic of Korea—a busy year indeed.★



Han, Sang Tok



Kim, Chin Son

DESC-Korea's transportation section consists of two Korean nationals with 66 combined years of fuel transportation experience. Han, Sang Tok is known throughout the Korean petroleum community as the "Godfather" due to his "can do easy" philosophy and ability to accomplish product movements considered impossible by others. Kim, Chin Son has been his able assistant for the last 14 years.

DESC-Korea's Quality Division

By Nelson Payne

Mission: to provide clean, dry (on-specification) fuel to customers on the peninsula of South Korea—"the tip of the spear."

Staff: civilian and military quality assurance specialists (QASs) working with both U.S. and Republic of Korea government-owned, contractor-operated (GOCO) Defense Fuel Support Point (DFSP) contractors. Through product and facility surveillance, and by ensuring that proper safety, environmental, and fuel handling and storage practices are met, the Korea QAS team enables the warfighters to accomplish their mission.



Fuel tanker approaching DFSP Pohang monobuoy.

Edward Guthrie, is based out of DFSP Waegwan.

QSTS, the southern quality team, is responsible for fuel entering the Trans-Korea Pipeline at the DFSP Pohang fuel terminal. They are also responsible for GOCO DFSP facilities near Pohang and Yechon. These facilities support U.S. military forces by providing fuel for annual exercises and daily operations. Fuel arriving at the Pohang fuel terminal via barges and tankers is shipped through the Trans-Korea Pipeline to DFSP Waegwan where it is dispersed throughout the southern area of responsibility. The fuel is shipped to the northern area by pipeline, tank truck and rail tank car.

At DFSP Pyongtaek, QSTN, the northern quality team, assumes surveillance responsibility. From

DFSP Pyongtaek, the fuel is transfer by pipeline, tank truck or rail tank car to service units throughout the northern area of responsibility and north to DFSP Uijongbu, a mere 50 miles from the demilitarized zone

Our mission in South Korea is to ensure the quality of fuel through comprehensive surveillance and inspection of various types of facilities on the peninsula.

where North Korea meets South Korea. In addition, QSTN provides surveillance for fuel entering the GOCO DFSP at Kunsan by tanker or barge. The fuel is then shipped by pipeline to Kunsan Air Base.

The quality division chief, Nelson Payne, operates out of the DESC-Korea main office located at Camp Walker, Taegu, where surveillance operations are coordinated through QAS personnel at opposite ends of the peninsula. Two teams provide surveillance for all fuel being provided to the U.S. Air Force, Army, Navy, Marine Corps, and other U.S. government customers on the peninsula. Quality Support Team North, consisting of Glenn Tablan and Sgt. 1st Class Peter Humphries, is based at Camp Humphreys near Pyongtaek. Quality Support Team South, consisting of Refugio (Leo) Burrueal and Senior Master Sgt.



U.S. Navy and Marine Corps fuel exercise at Dogo Beach.

QAS personnel at both southern and northern locations are responsible for surveillance of over 450,000 barrels of throughput per month. A quality personnel and surveillance database is being deployed to maintain a record of QAS training, facility and miscellaneous information, as well as daily surveillance data gathered at the DFSP facilities.

Part of a quality assurance specialist's job on the peninsula is to provide customer assistance and to work hand-in-hand with contractors

and customers to accomplish the warfighter's mission. In April 2001, Mr. Tablan and Sgt. 1st Class Humphries assisted the 248th Quartermaster Petroleum Liaison Team with fuel analysis training for U.S. Army laboratory technicians at the Pyongtaek GOCO fuel laboratory. They also assisted U.S. Army personnel with initial certification requirements for a B-1 mobile fuel laboratory.

Furthermore, QAS personnel travel to various military installations to assist service personnel with fuel

quality problems that may occur due to improper handling, storage or other operational procedures.

QAS personnel also serve as contracting officer representatives. These additional duties require that they work closely with contractors to identify safety, environmental and operational facility requirements. Quality assurance specialists ensure that facility deficiencies are addressed through the task order process.

QAS personnel are also involved in self-help and quality of life projects to improve working and living conditions at their assigned duty locations. The north and south quality teams have performed self-help projects to improve their offices at DFSP Waegwan and Camp Humphreys. In addition, projects were completed to improve the quality of life at the DFSP Pohang ready room. The ready room provides office space and living quarters for the QAS personnel during tanker and barge offloading operations.

Our mission in South Korea is to ensure the quality of fuel through comprehensive surveillance and inspection of various types of facilities on the peninsula. However, our job is not only inspection—it's quality through teamwork. We strive for improvement by involving contractors and customers in creating a better work environment and cohesive relationships, which support the warfighter at the "tip of the spear."★

Nelson Payne is chief of Defense Energy Support Center-Korea's quality division.



Pyongtaek government-owned, contractor-operated fuel laboratory.

DESC-Japan in the Land of the Rising Sun

On clear mornings from October through April, majestic Mount Fuji can be seen from the Defense Energy Support Center-Japan office housed in the United States Forces Japan 5th Air Force building. DESC-Japan carries out DESC's mission to all Department of Defense and U.S. government agencies in Japan. This small office of six personnel manages nearly 50 percent of the Pacific Command's entire fuel inventory. Meet the staff that manages a DESC fuel throughput in excess of 23,000 MBBLs (thousands of barrels) annually.

DESC-Japan's commander, Lt. Col. Mark A. Aicher, USAF, joined the DESC-Japan staff in July 1999 and oversees fuel operations at 15 fuel terminals located from the northern part of Japan to the island of Okinawa. He also serves as the resident fuels expert supporting U.S. Forces Japan's petroleum staff. His support staff includes one U.S. Army sergeant first class, one U.S. civil service employee, and three local nationals.

Ed Janco, inventory manager, joined the team in December 1998 and is responsible for coordinating with all terminals and ensuring that all product inventories are maintained at the maximum levels possible. He is also responsible for scheduling fuel deliveries and providing ullage and slating information as well as scheduling and tracking intermodal container shipments of lube oil.

Once Mr. Janco gets the fuel to the intermediate deep-draft terminals, the transfer of fuel to the main operating bases passes to civilian contractors who move the product by rail tank car or tank truck.

Sgt. 1st Class Dwight Tarver manages the transportation contracts that ensure the fuel gets to the end user, including rail tank car leasing, switching, cleaning, line haul, and tank truck contracts. He was the driving force behind a recent reduction in the number of leased rail tank cars used in Japan. His initiative saves DESC nearly \$60,000 annually.

Christina Nishie joined the team when the office opened in 1994. She manages the office's operating budget and administers the Posts, Camps and Stations (PC&S) ground fuels contracts totaling approximately \$80 million. Yumi Morita joined DESC in July 2001 to assist Ms. Nishie with Japan's PC&S contracts, a growing business in Japan. Kaoru Sakauchi, an office administration specialist, handles all administrative duties for the office, including coordinating all personnel and visitor travel arrangements.

On the horizon, DESC-Japan is scheduled to work with U.S. Forces Japan to review the fuels infrastructure in Japan and devise a



Lt. Col. Mark A. Aicher



Ed Janco



Sgt. 1st Class Dwight Tarver

strategic action plan to optimize the petroleum distribution network. The study, currently awaiting funding, will strive to ensure that millions of military dollars are spent wisely.★



Christina Nishie



Yumi Morita



Kaoru Sakauchi

Koshiba Fuel Terminal to Close

One of the Defense Energy Support Center's largest Defense Fuel Support Points is closing. After 66 years of service to both the Japanese Imperial Navy and the U.S. military, DFSP Koshiba is scheduled to issue its last gallon of jet fuel in March 2002.

Originally constructed in 1936 by the Japanese military, the terminal served as a refueling point for the Japanese Imperial Navy. After World War II, Mitsubishi Oil operated the terminal under the jurisdiction of the U.S. Navy. In 1948, the Japan Oil Storage Company operated the terminal under the direction of the U.S. Army. When the Korean War broke out, the U.S. Army took over the terminal's operation until 1971 when the U.S. Navy assumed operational responsibility.

Prior to 1975, DFSP Koshiba was a port facility, but a land reclamation project has moved the shore nearly one mile away from the terminal. The facility has the capability to store over 2 million barrels of fuel, but during the past several years, only 1.46 million barrels of JP-8 were stored there.

In late 1999, DESC-Yokota, FISC [Fleet and Industrial Supply Center] Yokosuka Code 700 and the Sub Area Petroleum Officer-Japan determined that DFSP Koshiba could no longer serve its intended purpose.

Because of draft limitations, fuel cannot be received or issued fast enough at the terminal to satisfy requirements. Requirements assigned to Koshiba were allocated elsewhere in Japan and the Pacific Command J4 made the decision to close the facility.

The inventory drawdown began in August 2000 and the product being removed is currently supporting DFSP Yokota through DFSP Tsurumi. Coordination with DESC's

DESC will save approximately \$3.5 million in projected maintenance and repair costs by closing the terminal.

Bulk Fuels division at Fort Belvoir was necessary to ensure the bulk fuel purchase program was not adversely affected. To lessen the impact on suppliers, the drawdown should be completed in two years or less.

DESC will save approximately \$3.5 million in projected maintenance and repair costs by closing the terminal. Once all DESC fuel is lifted from the facility, the U.S. Navy and United States Forces Japan will determine what to do with the property.★

Operations, Planning in the Pacific

Supporting Peacekeeping, Humanitarian Relief, Contingencies and Exercises

Mission: to support operational plans of fuels annexes for United States Forces Korea, United States Forces Japan, and the United States Pacific Command.

Defense Energy Support Center-Pacific provides fuel support and management to forces from all four services conducting military contingencies, peacekeeping operations, humanitarian relief operations, and military exercises in more than 43 countries dispersed throughout 105 million square miles.

Providing petroleum support for non-war missions in the region is paramount. In June 2001, for example, DESC-Pacific responded to a request for jet fuel support ashore from a Marine Forces Pacific unit conducting humanitarian relief missions in East Timor. Concerns over a safe alternative to shipboard refueling of helicopters during inclement weather pointed to a need for contractor support at the local airport in Dili, East Timor. The recent award of an into-plane contract at Comodoro International Airport greatly enhanced the flexibility of all forces operating or transiting the area.

DESC-Pacific also supports units that participate in 11 major joint

and combined training exercises during the year, from Thailand to Alaska. DESC-Korea participates in two major exercises on the Korean peninsula annually: Receipt, Staging, Onward Movement and Integration, and Ulchi Focus Lens. Each exercise tests the accuracy and flexibility of support plans and annexes, as well as providing personnel with challenging and realistic scenarios impacting logistics pipelines. Through the Combined Petroleum Support Center, DESC-Korea operations personnel join forces with U.S. reserve augmentees and Republic of Korea armed forces to monitor all aspects of petroleum distribution and material management, and provide the warfighting joint command with technical advice and recommendations.

How do you plan for wholesale petroleum distribution and resupply operations in an area of responsibility that spans 50 percent of the earth's surface? By building a dedicated, talented, and hard-working team of plans and operations officers and non-commissioned officers throughout the region who interact



Maj. Richard Ellis, operations and petroleum logistics officer

daily with warfighting logisticians in the theater.

As the DESC-Pacific operations and petroleum logistics officer, Maj. Rick Ellis, USA, serves as the primary communication link between DESC-Pacific and the United States Pacific Command's Joint Petroleum Office for operational issues. Rounding out the regional planning team—Maj. Mike Todd, USAF; Sgt. 1st Class Randall Beltran, USA (DESC-Korea); Lt. Col. Mark Aicher, USAF (DESC-Japan); and Master Sgt. Scott Marcinkowski, USA (DESC-Alaska).★

MORE DEFENSE ENERGY SUPPORT CENTER— PACIFIC EMPLOYEES. . .



*Gary Moessinger, quality
manager*



*Karen Fujita, inventory
management specialist*



*Annette Cravalho, supply
manager*



*Sheri Miyasato, inventory
management specialist*



Lynne Yoneda, budget analyst



*Elizabeth Hooks,
administrative assistant*

2001 American Petroleum Institute Award

The Naval Supply Systems Command (NAVSUP) recently announced the winners and runners-up of this year's American Petroleum Institute (API) award. The award is presented annually to recognize Navy and Marine Corps fuel activities that make the most significant contributions to Navy and Marine Corps fuel operations and the Fleet fuel support mission. This year's winners and runners-up are:

- Best Navy Bulk Fuel Terminal: Fleet and Industrial Supply Center Norfolk, Va. (runner-up–Naval Air Station Keflavik, Iceland)
- Best Naval Aviation Fuel Activity: Naval Air Station Oceana, Va. (runner-up–Naval Air Station, Joint Reserve Base, Fort Worth, Texas)
- Best Marine Corps Fuel Activity: Marine Corps Air Station Camp Pendleton, Calif. (runner-up–Marine Corps Air Station New River, N.C.)



API Award Ceremony at FISC Norfolk, Va. Left to right: Rear Adm. Paul Soderberg, CINCLANTFLT director; Capt. William Kowba, commanding officer, FISC Norfolk; Capt. Mark Heinrich, commanding officer, Navy Petroleum Office; Lt. Cmdr. Keith Ehrhard, FISC Norfolk fuels officer; Chris Steele, Trajen terminal superintendent; Rear Adm. Christopher Cole, commander, Navy Region, Mid-Atlantic.

Each participant was evaluated on an overall strict set of criteria that included fuel operations and mission support, inventory control and accountability, quality surveillance, facility and equipment maintenance, facility planning and project execution, training, safety, fire prevention, environmental compliance, administration, and significant accomplishments. The selection process entailed a detailed administrative review and endorsement of each application by the activity's major claimant, a technical evaluation by senior fuel analysts at the Navy Petroleum Office, and an in-depth on-site facility inspection of the finalists in each category. ★

DoD Fraud Hotline Alert

To report instances of fraud, waste, abuse, or mismanagement in Defense Logistics Agency/ Department of Defense programs and operations, contact one of the following:

- a. Visit the DLA Complaint Program Web site: www.dla.mil/dss/dss-s.
- b. Call the DLA Complaint Program at 1-800-411-9127 or Defense Switched Network (DSN) 427-5447.
- c. Write to: Stephen M. Keefer (DSS-S), Defense Logistics Agency, 8725 John J. Kingman Road, Suite 2533, Fort Belvoir, VA 22060-6221.
- d. Visit the DoD Defense Hotline Web site: www.dodig.osd.mil/hotline.
- e. Call the DoD Defense Hotline Program at 1-800-424-9098.
- f. Write to: Defense Hotline, The Pentagon, Washington, DC 20301-1900.
- g. Visit the DoD Defense Hotline by e-mail: hotline@dodig.osd.mil.

Visit the DESC
Web site at:
www.desc.dla.mil

From Defense Energy Support Center-Houston. . .

POLEX 2001

Under the Petroleum, Oils and Lubricants Exercise (POLEX), U.S. Army Reserve petroleum units recently transported over 7 million gallons of JP-8 fuel on highways throughout the continental United States without incident for Defense Energy Support Center (DESC) customers.

This year's Army POLEX exercise, conducted from June 18 to 30, was the largest of its kind, and involved several reserve Quartermaster and Transportation units working with DESC quality personnel to ensure quality products were delivered to customers on spec and on time.

Army petroleum trucks traveled from 20 to more than 200 miles per day, five days a week, with the weekend devoted to maintenance, common task training, and military

occupational specialty training. All drivers received HAZMAT training at their reserve sites prior to the exercise. Other training included loading and unloading operations at a commercial terminal. Several units also received training in rail movement of petroleum trucks.

DESC-Houston, as the host nation, set up a Logistical Operations Center, which consisted of three liaison teams representing the 49th and 475th Quartermaster Groups. Each team was responsible for coordinating POL missions as well as briefing DESC-Houston's Debbra Hargrave, Lorraine Gallagher, and Eugene Pavey and other key personnel daily on all aspects of POLEX in their respective areas. The East and West teams consisted of a reserve senior and junior non-commissioned officer while the Americas team was

represented by active duty and reserve military and civilian personnel.

Units exercised their ability not only to transport fuel over sometimes long distances, but to coordinate with various reserve training centers, which were used as overnight rest areas for the drivers. Another critical area of concern was timing—when the trucks would be traveling. This was especially difficult in a highly populated location like the Houston metropolitan area.

Over 800 loads were safely transported across the United States and involved Defense Fuel Support Points in 11 states: Arizona, Alabama, Georgia, Massachusetts, Nebraska, New Hampshire, Maryland, Pennsylvania, New Jersey, Illinois, Iowa, Missouri, Washington and California. ★

Tropical Storm Floods Houston

On June 9, Houston's great flood of 2001, resulting from Tropical Storm Allison, brought over a foot of water to the city and 4.5 inches to the Defense Energy Support Center's Houston office. One might say that it was no big deal since the Houston office was in the process of remodeling because of a reorganization. However, almost everyone had files and boxes sitting on the floor along with their computers when the flood waters filled the offices.

*DESC-Houston stories by
Master Sgt. Ed Lisowski*

With the help of personnel from DESC's offices in St. Louis, Mo., Fort Dix, N.J., and Fort Belvoir, Va., we received replacement computers and were back to 100 percent operational within a week. Although some irreplaceable items were lost such as pictures and certificates, everyone teamed up and there was no disruption of service to our customers.

We learned a valuable lesson: Don't leave important items or computers on the floor, especially if your office is on the first floor. ★



Geothermal Energy and the Heat of the Earth

By Claire McIntyre

The center of the earth is hot, instigating a roiling, churning underground movement of hot water and liquid rock, sometimes speeding upward, exploding through the surface in a dramatic display of volcanoes, geysers and hot springs. Natural wonders aside, however, that same heat, most of which remains below the surface, can be captured for a number of energy-related uses, including heating, cooling and generation of electricity.

It's called geothermal energy. There are no toxic emissions, no need to burn fuel and no need to import fuel. The white clouds billowing above the power plant are not made of smoke. It's steam, water vapor. And the drills boring into the earth are not looking for oil. They're looking for hot rock and hot water.

At certain locations, notably in the western United States, wells can be drilled into the earth to tap into geothermal reservoirs—places where hot water, sometimes reaching temperatures of 700 degrees Fahrenheit, can be brought to the surface to generate electricity. A geothermal power plant, constructed on top of the reservoir, uses the water, heat and steam to turn turbine generators. The water recycles into the reservoir for

reheating; the plant operates 24 hours a day.

Geologists determine potential sites for geothermal reservoirs through satellite imagery, aerial photography and geophysical surveys. Exploratory drilling brings up pieces of rock that are tested for temperature. If the temperatures are high enough, bigger, deeper wells are drilled, some more than two miles in depth.

In addition to electricity generation from geothermal power plants, the heat of the earth can be used through two other methods: direct-use and heat pumps.

Direct Use

Hot water from reservoirs can also be used directly, rather than for conversion to energy. Residential and business buildings can be heated individually and collectively through district heating systems. Hot water is piped to heat exchangers to heat buildings or to a heat exchanger plant to heat city water.

In Klamath Falls, Ore., geothermal water is piped under streets and sidewalks to keep them from icing over. In other areas, the water is piped under growing crops to keep the ground from freezing to

extend the growing season without need of greenhouse structures. Fish and alligator farms use the water to speed growth. Health spas offer patrons hot spring bathing.

In Reykjavik, Iceland, 95 percent of buildings are heated using geothermal water, making it one of the cleanest cities in the world. Eighteen cities in the western United States currently use a geothermal district heating system, including Boise, Idaho. More than 270 cities in the western part of the nation could use district heating because they are located close enough to a geothermal reservoir. Worldwide, Poland, France, Hungary, Iceland and Turkey also use district heating systems, but more than 20 countries generate electricity from geothermal sources, including Italy, where the first geothermal power plant was built in Larderello in 1904.

But if a geothermal reservoir is not nearby, you can still use a geothermal, or ground source, heat pump. . .

Heat Pumps

The temperature a few feet beneath the surface of the earth ranges between 45 and 58 degrees—all around the world. Pumps circulate water or other

The drills boring into the earth are not looking for oil.

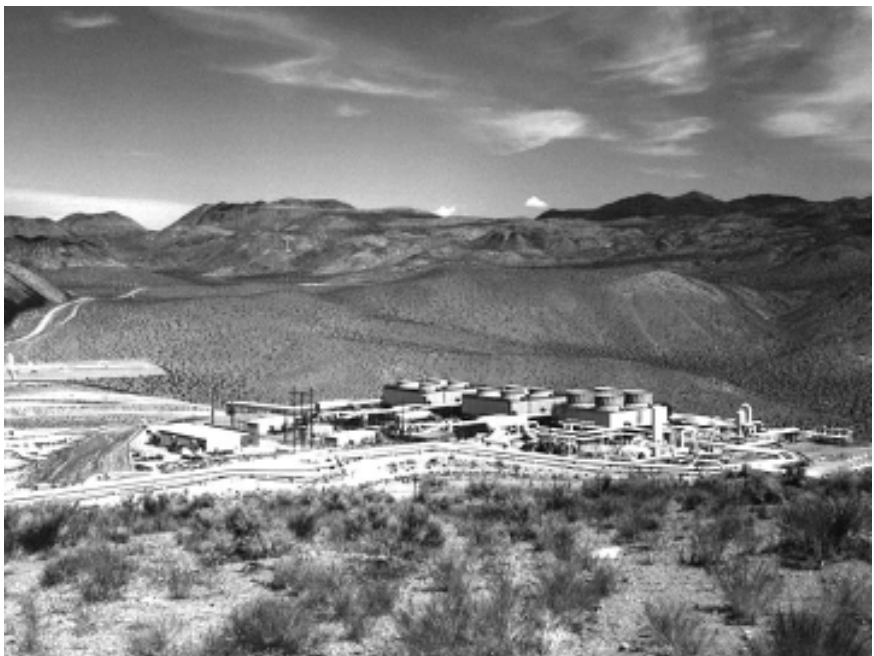
liquids, i.e., a non-toxic antifreeze mixture, through a loop of pipes in the ground next to a building. The pipes, via an electric compressor, either heat the liquid in the winter or cool it in the summer; the conditioned air circulates throughout the building via ducts. In either event, air from the building is brought back down into the earth where the temperature is fairly constant below the frost line, 3 to 5 feet below the surface, where the process continues. Closed loop systems circulate a water/antifreeze through the pipes. Open loop systems use water directly from a lake, well or pond, pump it through a heat exchanger to heat or cool the building, and then return the water to its source.

[Air source heat pumps pull heat and cold from the air itself. So the colder it is outside, the harder it is to pull heat from the air. Likewise, in the summer, it's harder to pull warm air from inside the building for transfer to the outside air. In contrast, a ground source heat pump transfers air into the earth to heat or cool it, where the temperature remains constant.]

Naval Air Weapons Station China Lake

As the largest U.S. Navy base in the world, Naval Air Weapons Station China Lake can also be distinguished by its four geothermal power plants and nine turbine generators. The 1.1 million-acre facility began producing geothermal power in 1987 through a contract with a private company that runs until 2009, with a 10-year option.

The privately funded power plants produce a total electricity output of 270 megawatts at any given moment, which translates to nearly



Geothermal power plant located at Naval Air Weapons Station China Lake including steam gathering system, well pads and power lines.

2300 billion kilowatt hours per year—enough electricity to meet the needs of about 1.1 million people. Use of this much electricity generated from geothermal energy translates to saving more than 4.1 million barrels of oil or 945,000 tons of coal annually.

As director of China Lake's Geothermal Program Office, Dr. Frank Monastero is quick to point out the benefits of the geothermal energy—it allows the facility to become less dependent on foreign fuel and saves money on utility bills. And since the private contractor that built the system sells excess electricity generated from the plants to the local utility company, the Navy gets a share of that revenue. "The Navy gets a reduction in their electricity bill as well as taking a percentage of the revenue generated by gross sales of the power," says Dr. Monastero.

Although the Geothermal Program Office is part of the Navy, its charter reaches across the

military services, assisting the Air Force and Army as well in developing geothermal projects. What does the future hold? Will other military bases follow China Lake's model?

The Geothermal Program Office is currently working to bring geothermal electricity to Naval Air Station Fallon, located 60 miles east of Reno, Nev., a project now in the contractor selection phase. "It takes about three years to get from point A, the first phase of a geothermal project, to point B—the actual delivery of power," notes Dr. Monastero. His office is also working on an assessment of two Army facilities, located at Herlong, Calif., and Hawthorne, Nev., to see if the sites are suitable for geothermal plants. He reports that Lajes Air Force Base located in the Azores also shows potential for the development of geothermal energy.

continued on page 40 ➤

They're looking for hot rock and water.

DoD Holds Facilities Forum at Fort Belvoir

If a group of private energy suppliers came together with Department of Defense officials to discuss the challenges involved in the maintenance and operation of military facilities, what sorts of ideas might be presented?

On May 16-17, 2001, the Office of the Deputy Undersecretary of Defense for Installations sponsored a "Vision 2020" forum entitled "The Future of Facilities" at Fort Belvoir, Va. Randall Yim, deputy undersecretary of defense for installations, opened the forum and served as a moderator.

Forum participants from the Department of Defense and private industry agreed on the magnitude of challenges facing today's military regarding infrastructure operation. "It's hard to set a strategic plan when faced with so many daunting problems," observed Jeffrey Jones, director of the Defense Energy Support Center, who served as a panelist at the forum. Some of the concerns expressed at the forum included:

- The consequences of not performing maintenance on installation buildings is not immediate. This makes postponing any action easy in contrast, for example, to an airplane, where the results of neglected maintenance are immediately apparent.
- Even if a policy change makes private sector contractors the

preferred provider for maintaining and operating military infrastructure, a corresponding cultural shift still needs to occur before the new approach can successfully take hold.

- The United States is in the process of going from a regulated to a deregulated electricity market. In theory, deregulation should bring prices down because more people come forward who can offer energy at a lower price, perhaps due to better equipment that can produce the product at a lower cost. Although fostering competition may be the goal in deregulation, it may take 15 to 20 years for technology to be developed that is innovative enough to significantly reduce prices. The more immediate goal, as illustrated in the California energy crisis, is to keep the system up and running rather than keeping prices down.
- Electricity prices may not go down or become less volatile over the next five years. Because commodities operate on a "boom/bust" cycle, with prices going up and down depending on supply, suppliers may withhold some of their capacity in order to drive prices up.
- Fuel cells, which create electricity from an electrochemical reaction between hydrogen and oxygen, have proven to be very energy-efficient, reliable and clean. The devices, which are portable and

can be scaled to a variety of sizes, can be used to power cell phones, vehicles and buildings. Fuel cell projects are currently underway with major automakers.

- The government's Request for Proposal (RFP) procedure needs modification if utility systems are going to be turned over to private industry, i.e., RFPs might be streamlined and made less complicated while retaining the necessary amount of detail.
- DoD lacks a comprehensive, overall plan for the military services to manage their infrastructure. Installations need to plan, assess, prioritize, budget and schedule building maintenance and repair. Most repairs are made on a reactive, rather than proactive, basis.★

From the Office of the Deputy Undersecretary of Defense for Installations:

"... the Department cannot afford to own, operate and maintain its aging utility infrastructure when industry can provide such services more cost-effectively and make the necessary capital investments to keep pace with future requirements.... The Services have historically undercapitalized their utility systems, leaving many of them in poor condition—unreliable and unsafe. Privatizing utility systems will allow private sector capital and expertise to bring them up to industry standards."

Flying from the Ground— The Predator Unmanned Aircraft

What kind of a plane is piloted from a ground control station instead of a cockpit? An unmanned aerial vehicle used for surveillance and reconnaissance.

The U.S. Air Force's Predator aircraft is small at 27 feet long, with an 80-horsepower engine. Since it can fly at only 70 mph, its speed and size make it appear as a non-threatening object, perhaps a bird, on radar systems. Its video camera, zoom and telephoto lenses, and infrared camera relay images gathered from the ground.

The Predator can fly higher than previous unmanned aerial vehicles (UAVs) and can stay in flight longer—more than 40 hours. Used during Operation Allied Force in Bosnia, the aircraft began test flights in 1994.

In addition to its subtle presence and sophisticated equipment, the Predator offers another defining characteristic—fearlessness. Since there's no pilot onboard, there's no threat of loss of life if the plane gets shot down. With a UAV, you can fly directly into a threatening situation to get pictures. During Operation Allied Force, 11 UAVs were destroyed by accidents and anti-aircraft fire.

The \$3.2 million plane is hard to fly because the pilot, armed with a stick and throttle in the control station, must fly the craft based on images from a video camera in the



Predator unmanned aerial vehicle flies above aircraft carrier USS Carl Vinson (CVN 70) on a simulated Navy aerial reconnaissance flight off the coast of southern California on Dec. 5, 1995. DoD photo by Petty Officer 3rd Class Jeffrey S. Viano, U.S. Navy.

plane's nose section, which provides a 30-degree view. Communication between the pilot and the craft is sent via radio, cable and satellite. Because the pilot is not present in the plane, there are no physical sensations or cues to aid in directing the flight. Sensor operators operate the cameras and radar, serving much like co-pilots, and analyze images as the plane relays them rather than days or weeks later.

Pilots do not generally clamor for duty with a UAV. Because Predator duty keeps its operators out of a plane for two years or so, pilots' in-air skills may decline. In addition, they don't accumulate flying hours that contribute to flight pay. However, the Air Force may reward pilots for serving time with the Predator by giving them a particularly good succeeding assignment.

For the future, will UAVs carry bombs and serve as attack planes? The answer is uncertain. Treaties currently limit the use of unmanned weapons systems. However, various

plane manufacturers have already begun development of unmanned combat aircraft. ★

In 1996, Diane Whitney, the Defense Energy Support Center's safety manager, deployed to Hungary for four weeks conducting safety and health inspections of base camps during temporary assignment with the Defense Contract Management Command International. Her lodgings consisted of a tent shared with several Air Force captains who worked at night in a "clamshell" airplane hangar on what was then a classified project—the Predator. Although they could not talk about their work, they did give Ms. Whitney a Predator T-shirt. It was not until some time later that she learned about the unique mission and characteristics of the aircraft.



T-shirt logo.

Usage

According to the Geothermal Education Office, the United States (mostly western states and Hawaii) produces 2700 megawatts of electricity from geothermal energy each year—the equivalent of burning 60 million barrels of oil. In addition, 300,000 U.S. homes, schools and offices use geothermal heat pumps. Worldwide, 8200 megawatts of electricity are generated from geothermal energy each year from 21, mostly developing, countries. More than 40 countries use hot water directly from geothermal reservoirs.

On the horizon, many places have hot liquid rock lying several miles beneath the surface of the earth, but no water. Various countries are currently researching the possibility of placing pipes in such areas to carry water to the sites so geothermal energy can be derived by heating piped-in water with naturally occurring hot rock.

Apparently, the heat of the earth doesn't have to burst through the surface to make a dramatic statement about the power of natural resources. Aboveground or underground, it's a wonder just the same. ★

Sources: Geothermal Education Office, www.geothermal.marin.org; U.S. Department of Energy, www.eren.doe.gov/geothermal.

Geothermal Facts

- While most areas within the United States can use geothermal heat pumps, geothermal power plants and reservoirs are predominantly located in the western U.S.
- Once magma, hot liquid rock, breaks through the surface of the earth, it's called "lava."
- Geo = earth; thermal = heat
- The first U.S. geothermal power plants were built in 1962 at northern California's Geysers dry steam field. Nevada has more hot springs, for its size, than any other state.
- Fastest period of geothermal power capacity in U.S.: 1980 to 1990
- Wells for individual home and building heat pumps are drilled about 250 feet into the earth; wells for geothermal power plants are drilled down thousands of feet (the China Lake, Calif., geothermal facility recently drilled its deepest well at just over 13,000 feet).



Geothermal water pipes installed beneath sidewalks in Klamath Falls, Ore., prevent icing over. © 2000 Geothermal Education Office.